TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

SOLIDIFICATION OF HIGH SALT WASTES

Identification No.: RL-MW020
Date: October 2001

Program: Mixed Waste
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP02
Waste Stream: 2124 – 200 ETF Sludge
TSD Title: TBD
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: 200 Area Effluent Treatment Facility (ETF)

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" priority:

____ 1. Critical to the success of the ACPC.
_X_ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Solidification of High Salt Wastes.

Need/Opportunity Category: *Technology Opportunity* – The Site desires an alternative to the current baseline technology.

Need Description: The treatment of waste water results in the generation of a secondary waste that is very high in salt concentration. These salts are mainly sulfate salts of sodium, calcium, magnesium, and potassium. These salts normally contain trace levels of inorganic hazardous constituents. Future waste from HLW tank pretreatment and vitrification will also result in significant Technetium and Iodine-129 levels in the stream. A method for the solidification of the secondary waste is needed that meets the regulatory requirements for the disposal of MLLW and LLW, along with the disposal site's WAC. The need also includes looking at waste forms that would limit migration of I-129 in the burial grounds.

Schedule Requirements:

Earliest Date Required: June 2005

Latest Date Required: June 2005

Must be implemented by June 2005, consistent with the arrival of the Waste Treatment Plant effluent.

Problem Description: The waste water being treated in the 200 Area ETF contains elevated levels of radionuclides along with organic and inorganic constituents. The organic constituents are destroyed in the ETF. The radionuclides and inorganic constituents are concentrated in the secondary waste. The secondary waste matrix consists primarily of sulfate salts including sodium, calcium, magnesium, and potassium. Depending on the waste water being treated, this secondary waste matrix contains varying levels of radionuclides and hazardous constituents. For the secondary waste to meet regulatory requirements and WAC for the disposal site, it will be necessary for some of the ETF secondary waste to be solidified. Without solidification, the potential exists for the secondary waste to be above the LDR treatment standards.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: Potential life cycle saving are estimated to lower disposal cost by $1,000K.

Benefit to the Project Baseline of Filling Need: Provide final waste form for high salt waste.

Relevant PBS Milestone: N/A

Functional Performance Requirements: Cost-effective technology to solidify a waste stream with greater than 50% salt concentration.

Work Breakdown Structure (WBS) No.:	***TIP No.:***
1.2.3	N/A

Justification For Need:

Technical: Throughput of the secondary treatment train at the ETF is reduced.

Regulatory: Meet LDR at ERDF.

Environmental Safety & Health: N/A.

Cultural/Stakeholder Concerns: N/A.

Other: Addition of excess caustic and sulfuric acid results in unnecessary costs.

Current Baseline Technology: Secondary waste is treated in the ETF by evaporation and drying to produce a powder waste form for disposal in either the ERDF or the mixed waste trench.

End-User: Waste Management Project.

Contractor Facility/Project Manager: Donald Flyckt, Fluor Hanford, Inc. (FH), (509) 372-3142, Fax (509) 372-2089, Don_L_Flyckt@rl.gov.

Site Technical Point-of-Contact: Dale Black, Fluor Hanford, Inc. (FH), (509) 376-8458, Fax (509) 372-1441, Dale_G_Black@rl.gov; Donald Flyckt, FH, (509) 372-3142, Fax (509) 372-2089, Don_L_Flyckt@rl.gov.

DOE End-User/Representative Point-of-Contact: Kevin Leary, DOE-RL, (509) 373-7285, Fax (509) 372-1926, Kevin_D_Leary@rl.gov.

Waste volume, gallons	~10 million gal/yr of wastes to be treated
Waste form	Solids (powder) or evaporator brine
Waste stream I.D.	2124
Contaminants and co-contaminants	Technetium, I-129, others
Function of technology	Produce waste form to meet ERDF/LLBG requirements
Source category	Multiple waste water sources